MATERIALS:

* 2-liter clear plastic pop bottle
* matches (Mrs. Herrington will work with these)
* warm water

PROCESS:  
1. Fill the clear plastic 2-liter bottle one-third full of warm water and place the cap on.

As warm water evaporates, it adds water vapor to the air inside the bottle. This is the first ingredient to make a cloud.

2. Squeeze and release the bottle and observe what happens. You’ll notice that nothing happens. Why?

The squeeze represents the high pressure that occurs in the atmosphere. The release represents the low pressure that occurs in the atmosphere. Remember the low pressure lets air rise and create clouds. If the inside of the bottle becomes covered with condensation or water droplets, just shake the bottle to get rid of them.

3. Take the cap off the bottle. Have Mrs. Herrington carefully light a match and hold the match near the opening of the bottle.

4. Mrs. Herrington will then drop the match in the bottle and quickly. Put on the cap, trapping the smoke inside.

Dust, smoke or other particles in the air is the second ingredient to make a cloud.

5. Once again, slowly squeeze the bottle hard and release. What happens? A cloud appears when you release and disappears when you squeeze.

The third ingredient in clouds is a drop in air pressure.

EXPLANATION:

What three ingredients do clouds need to form?

1.  
2.   
3.

Questions:

1. When a high pressure system comes through an area, water vapor (water in its gas state) does not rise. If water vapor is not allowed to rise, what will happen?

2. When a low pressure system comes through an area, water vapor (water in its gas state) rises. If water vapor is allowed to rise, what will happen?

3. How do dust and other particles get into the atmosphere?

4. Think back to when Mrs. Herrington did the Cloud in a Bottle Demonstration. What was she adding to the bottle that increased the pressure inside the bottle?   
 a. more water vapor molecules  
 b. more air molecules  
 c. more water  
 d. more water molecules

5. When Mrs. Herrington took the stopper out of the bottle, air molecules rushed out creating what inside in the bottle?  
 a. higher pressure  
 b. lower pressure  
 c. equalized pressure  
 c. no pressure

6. How do air and water vapor molecules act when they are under pressure?

7. If the pressure is lowered, how will the air and water vapor molecules act?

Information: Water in its invisible gaseous state (water vapor), can be made to condense into the form of tiny water droplets. By adding particles like the smoke, it enhances the process of water condensation. Squeezing the bottle causes the air pressure to drop. This creates a cloud!